



ATSDR
AGENCY FOR TOXIC SUBSTANCES
AND DISEASE REGISTRY

Public Health Assessment for

**SOUTH DAYTON DUMP & LANDFILL
MORaine, MONTGOMERY COUNTY, OHIO
EPA FACILITY ID: OHD980611388
SEPTEMBER 28, 2007**

For Public Comment

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE**
Agency for Toxic Substances and Disease Registry

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Agency for Toxic Substances and Disease Registry.....Julie L. Gerberding, M.D., M.P.H., Administrator
Howard Frumkin, M.D., Dr.P.H., Director

Division of Health Assessment and Consultation.....William Cibulas, Jr., Ph.D., Director
Sharon Williams-Fleetwood, Ph.D., Deputy Director

Cooperative Agreement and Program Evaluation Branch.....Richard E. Gillig, M.C.P., Chief

Exposure Investigations and Site Assessment Branch.....Susan M. Moore, M.S., Chief

Health Promotion and Community Involvement Branch.....Susan J. Robinson, M.S., Chief

Site and Radiological Assessment Branch.....Sandra G. Isaacs, B.S., Chief

Use of trade names is for identification only and does not constitute endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

Please address comments regarding this report to:

Agency for Toxic Substances and Disease Registry
Attn: Records Center
1600 Clifton Road, N.E., MS E-60
Atlanta, Georgia 30333

You May Contact ATSDR Toll Free at
1-800-CDC-INFO or
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PUBLIC HEALTH ASSESSMENT

SOUTH DAYTON DUMP & LANDFILL

MORaine, MONTGOMERY COUNTY, OHIO

EPA FACILITY ID: OHD980611388

Prepared by:

Ohio Department of Health
Health Assessment Section
Under a cooperative agreement with
Agency for Toxic Substances and Disease Registry

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SUMMARY

The South Dayton Dump & Landfill (SDD) site is located in a mixed industrial and residential portion of Moraine, Montgomery County, Ohio. The site was proposed for the National Priorities List (NPL) of Superfund hazardous waste sites on September 23, 2004. The main public health concerns at the site are: 1) the possibility that on site workers may come into contact with contaminants in the soil; 2) that groundwater contamination could impact local drinking water supplies; and 3) the possibility that chemical contaminants in the groundwater will migrate off-site, vaporize to the soil and enter the indoor air of nearby residences and businesses.

Sand and gravel pits were excavated at the SDD site after 1935. These pits were filled with a variety of municipal and industrial wastes during landfill operations conducted between 1941 and 1996. SDD operated under a solid waste disposal permit issued by Montgomery County Health Department (MCHD), which allowed the disposal of waste in the former gravel pits: solid, inert, and insoluble material such as unregulated foundry sand, slag, glass, and demolition debris. The primary disposal practice at the SDD prior to 1970 was open burning of vegetation and wood waste and landfilling of the other wastes. Between 1950 and 1970, drummed waste was occasionally accepted at the landfill. There are numerous reports that indicate the SDD disposed of hazardous waste in addition to municipal waste and construction debris at the site. Reports indicate that drums of hazardous waste were accepted from the Hobart Corporation between July 1973 and July 1976. Ohio EPA (Ohio Environmental Protection Agency) and Montgomery County health officials inspected the site in May 1978 and noted several containers labeled "hazardous". A CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act – USEPA's superfund law) Notification of Hazardous Waste Site Form was submitted in 1981 reporting that industrial waste had been transported to SDD for disposal. In 2000, drums containing hazardous waste were excavated from the southern portion of the Valley Asphalt Plant, in an area now known to have been the site of landfilling operations by SDD.

Elevated levels of lead (up to 12,100 ppm) and copper (up to 191,000 ppm) have been found in on-site soils but currently there is no data indicating that these contaminants are leaving the SDD site. The contaminants that were found in the sediments adjacent to the SDD site and in the Great Miami River have not been attributed the SDD site. The contaminants vinyl chloride (up to 180 ppb) and trichloroethylene (up to 260 ppb) have been found in the groundwater monitoring wells (MW-101A and MW-210) on the southern and southeastern boundaries downgradient of the SDD site (Hoffman, 2005). There are no known wells in the immediate vicinity of the site that are currently used as a source of drinking water.

This site is currently undergoing a Remedial Investigation and Feasibility Study (RI/FS) by the potentially responsible parties under supervision of the U.S. EPA's Superfund Alternative Sites (SAS) program. HAS will review any additional environmental data collected.

The SDD site posed an ***"Indeterminate Public Health Hazard"*** to area residents to contaminants through inhalation from vapor intrusion in the *past*. There are no soil gas or indoor air data that indicate that vapor intrusion of contaminants occurred at nearby

residences. There are no data to indicate that nearby drinking water wells were contaminated. There are no data that indicate that the workers or visitors to the site have been exposed to contaminants in the past. In the past, elevated levels of polychlorinated biphenyls (PCBs) and mercury have been found in the sediments and elevated levels of PCBs and mercury have been found in fish tissues in the Great Miami River, but this contamination has not been linked conclusively to the SDD site.

The SDD site *currently* poses an **“Indeterminate Public Health Hazard”** for the exposure of nearby residents, local workers, and site visitors to contaminants. Nearby residents and workers may be exposed through inhalation of contaminants from vapor intrusion into their homes or businesses. Elevated levels of trichloroethylene (TCE) (up to 260 ppb) and vinyl chloride (VC) (up to 180 ppb) (Hoffman, 2005) are being transported off-site in the groundwater, but there are no soil gas or indoor air data that indicate that vapor intrusion of contaminants is occurring at nearby residences. There are no data that indicate that drinking water wells are being impacted by contaminants from the SDD site. Workers, residents and visitors who enter the site may come into contact with contaminants in the soil by inhaling dust, ingesting soil by inadvertently transferring contaminants to food or drink, and possible adsorption of contaminants through the skin. There are no data that indicate that nearby residents, workers, or visitors to the site are currently being exposed to contaminants from the SDD site.

The SDD site may pose an **“Indeterminate Public Health Hazard”** in the *future* to area residents and workers via drinking contaminated groundwater, vapor intrusion, and contact with contaminants in soil. The contamination in the groundwater from South Dayton Dump appears to be moving toward residences southeast of the site. There are wellfields about four miles to the south that obtain water from the same aquifer that has become contaminated from the SDD. Some of these contaminants may migrate into the indoor air of residents and area workers. High concentrations of contaminants in the soil may pose a threat to area workers that come into direct contact with them.

PURPOSE AND HEALTH ISSUES

The South Dayton Dump site is a former sand and gravel mining operation along the Great Miami River in Moraine, Montgomery County, Ohio. In September 23, 2004, the SDD site was proposed for inclusion on the U.S. Environmental Protection Agency's (USEPA's) National Priorities List (NPL) of Superfund hazardous waste sites. The site was proposed for the NPL as a result of confirmed soil and groundwater contamination with chlorinated volatiles and other compounds. Vinyl chloride (VC) (up to 180 ppb) and trichloroethylene (TCE) (up to 260 ppb) were detected in monitoring wells drilled into the underlying drinking water aquifer (Hoffman, 2005). Municipal wellfields four miles away have a potential to become contaminated and people drinking the water may be exposed to the contaminants. Upon the site being listed on the NPL, the Agency for Toxic Substances and Disease Registry (ATSDR) is required by a congressional mandate to complete a Public Health Assessment evaluating the public health threat posed by all NPL sites. The Health Assessment Section (HAS) of the Ohio Department of Health has had a cooperative agreement with ATSDR since 1990. As part of that agreement, HAS agreed to take the lead in completing these Public Health Assessments. This health assessment will evaluate the environmental data collected at the site and will make conclusions and recommendations for additional actions that may be necessary to protect public health.

BACKGROUND

Site Location

The SDD site is a former landfill located at 1975 Dryden Road, in Moraine, Ohio (Figure 1). The site occupies at least 80 acres and is at an elevation of approximately 730 feet above sea level. It is located on the low, gently sloping flood plain along the east bank of the south-flowing Great Miami River. There are two 5-acre ponds on site that dry up occasionally and a larger, water filled gravel pit to the southwest. The topography gently slopes downward to the west and south with rain water flowing towards the grassy banks of the Great Miami River or into the on-site gravel pit.

SDD is located in heavily industrialized and commercial area southwest of the city of Dayton. The nearest residential area is a mobile home park approximately a quarter mile southeast of the site and seven residences south of the site along East River Road (Figure 2). Light industries and commercial businesses are located along the east and southeast boundaries of the site on Dryden Road and East River Road. On the north side of SDD, there is an asphalt plant. It has been determined through excavations and aerial photos that at least some of this asphalt plant's property was impacted by past SDD landfill operations. Also there are some large industrial sites in the vicinity of the site including the Dayton Power and Light plant directly east of the site (Figure 2) and the former General Motors plants and the former Frigidaire plant about a mile south of the site.

The site is only fenced along the east side and has a locked gate at the entrance by Dryden Road. Incidents of trespassing and vandalism have occurred in the past at this site (Ohio EPA, 1996 a, p. 27). The gate is set back approximately 100 feet west of Dryden Road. An office trailer and some abandoned house trailers are located just inside the access gate. The site is relatively flat, but the terrain is interrupted along the southeast

border by a dry ravine and to the southwest by the gravel pit. Most of the site appears to be heavily vegetated (HAS site visit, July, 2005). On site, a dirt access road extends along the north central area and loops around the southwestern section of the property (Figure 3). Ohio EPA personnel observed stacks of wooden pallets, piles of concrete, piles of wood and metal debris, mounds of fly ash and one discarded 55 gallon drum on either side of the north access road during site visits. There is an abandoned "air curtain destructor" (a controlled open burning device, see History) at the northwest corner of the site, along the north access road. There is also a 35 by 100 foot concrete pad, located just east of the air curtain destructor. South of the air curtain destructor, there is a depression about 7 feet deeper than the surrounding land surface. This depression occasionally has had some water ponded in it as reported from site visits and investigations by Ohio EPA and USEPA personnel. Near the center of the site, a dirt road branches off the north access road, extending south across the site, then east along the dry ravine, and back to the entrance area. Between the deep depression south of the "air curtain destructor" and the dirt road that crosses the center of the site, there is a large shallow depression lacking vegetation (See Figure 3).

History

Sometime after 1935, sand and gravel was excavated from the 80 acre parcel of land now known as the SDD site. In 1941, the site was opened and operated as a dump until it's closure in 1996 (Ecology and Environment (E&E), 1991). The sand and gravel pits were filled with waste during the landfill operations conducted between 1941 and 1996. From 1941 till 1986, the SDD operated as a sanitary landfill. The following operating licenses were held within that time period;

- 1969 to 1974 – License to accept commercial, industrial, and household wastes
- 1975 – License to accept sludges and demolition wastes
- 1976 to 1986 – License to accept dry commercial, industrial, household, and salvageable wastes and for wood burning (USEPA, 2004).

From 1986 till it closed in 1996, SDD operated as a construction and demolition debris landfill.

The primary disposal practice was open burning of material such as wood and brush, until open burning was prohibited in 1970. The unburnable and burnt residue was then land-filled. The operator stated that the landfill does not have a liner. After 1970, the primary method of disposal became land-filling. An attempt was made with the development of an "air curtain destructor" to continue to burn waste in a "controlled open burning device" and the landfill operator applied for a special open burning permit. The Ohio Department of Health never granted approval, and the operator abandoned the project. The air curtain destructor was never dismantled and is still present on site (E&E, 1991).

Between 1950 and 1970 drummed wastes were reported to have been occasionally accepted at SDD (E&E, 1991). The method of disposal for these drums was to empty the contents at the landfill and then the drums were either sold to a drum recycler or buried on site. Between June 1973 and July 1976, drums containing hazardous wastes were accepted at SDD from two nearby Hobart Corporation facilities in Dayton, Ohio (E&E, 1991). During a routine inspection of the site in 1978 representatives of the Ohio EPA

and Montgomery County Combined General Health District identified several problems at the SDD, including the presence of containers labeled as "hazardous" (E&E, 1991). On June 9, 1981, a Comprehensive Environmental Response, Compensation, and Liability Act (CERLA) Notification of Hazardous Waste Site Form was submitted by an industry waste hauler which stated that SDD had been used as a disposal landfill for the industrial as well as municipal wastes (E&E, 1991, PRC, 1995).

In 1985, the Ohio EPA prepared a preliminary assessment (PA) of the SDD site. The PA indicated that hazardous waste disposal at SDD posed a threat to the underlying drinking water aquifer and the adjacent surface waters of the Great Miami River (Ohio EPA, 1985).

Based on the PA and the more recent discovery of drummed waste at the site, the SDD was proposed for listing on the NPL, which is part of the Superfund cleanup process, on September 23, 2004. The USEPA uses the NPL listings as a guide in determining and prioritizing which sites need further investigation to assess the nature and extent of the threat that the site's contamination poses to human health and the environment. The site's potentially responsible parties are currently conducting a Remedial Investigation and Feasibility Study under the supervision of the U.S. EPA's Superfund Alternative Sites program.

Regional Hydrogeology and Groundwater Resources

The Great Miami River flows across a deep bedrock valley which is now filled with glacial sand and gravel deposits with an occasional layer of clay. These flood plain deposits range from 150 to 250 feet thick. The sand and gravel deposits are thickest near the present course of the Great Miami River and taper to 25 feet thick on the edges of the bedrock valley. Bedrock is encountered at depths ranging from 150 to 250 feet below ground surface (PRC, 1995).

Poorly sorted clays were deposited as incomplete layers along with the sand and gravel beds in the former river valley. These clay lenses do not, however, form a continuous, impermeable confining layer. The groundwater that may be perched above these layers is not isolated from the groundwater beneath it. The bulk of the soils under the site are porous and permeable sands and gravels (Ohio Department of Natural Resources well logs, 2005). The depth to the water table ranges from about 12 feet below ground surface (bgs) on the south portion of the landfill to about 18 feet bgs beneath the west portion of the landfill (USEPA, 2004). Surface water and groundwater may migrate through the glacial deposits all the way down to the bedrock. The bedrock limestone and shale layers do not transmit groundwater very well in comparison to the overlying sand and gravel deposits (OHIO EPA, 1996a). Drinking water and industrial production wells in the area of the site utilize the sand and gravel aquifer, not the bedrock aquifer, as a source of water (MCD, 2005).

Seventy-six percent of the water used in the area is withdrawn from the buried valley sand and gravel aquifer. Most of that water withdrawn from the aquifer (67 %), is used for public drinking water supplies (Miami Conservancy District [MCD], 2005). The SDD overlies the USEPA-designated Miami Valley Sole Source Aquifer system (Figure 4).

The Great Miami aquifer is the major drinking water aquifer in Montgomery County. It is a high-yield aquifer with pump rates of up to several thousand gallons per minute. In the vicinity of the site, the pump rate for the aquifer is rated at 500 to 1,000 or more gallons per minute of groundwater (OHIO EPA, 1996a).

Montgomery County is now getting their water from the city of Dayton. The city of Moraine receives water from Montgomery County, who in turn get their water from the city of Dayton wells. Dayton has two wellfields with a total of over 100 production wells, all located over 5 miles north and upstream of the SDD. Montgomery County has four wellfields in the area of the site (Figure 4). These wells are not in use but are maintained as standby wells. Montgomery County's former Lamme Road wellfield is located two and a half miles south-southeast of the site, and is now abandoned. Montgomery County's Dryden Road North wellfield is located about three miles southwest of the site and the Dryden Road South wellfield is located about three miles south-southwest of the site. The two Dryden Road wellfields have shown contamination in the past and are currently off-line. The future use of these wells is uncertain. The fourth Montgomery County wellfield is the Miami Shores wellfield located about three miles south-southwest of the site. This wellfield is maintained as a standby wellfield and was last used in 1989. If the Miami Shores wellfield was to be used, it would supply water to about 150,000 people. The city of West Carrollton has a wellfield just over four miles southwest of the site and supplies drinking water to about 10,000 people. Approximately two miles east of the site, the City of Oakwood maintains two wellfields providing service to 9,500 people (Ohio EPA, 1996a).

Within four miles of the SDD site, this aquifer provides drinking water to the following receptors; 1) the employees of the Delphi Automotive Systems Plant, 2) the residents of the Cities of Oakwood and West Carrollton, and 3) residents of Montgomery County served by Montgomery County's standby wells (USEPA, 2004) (Figure 4)

The depth to the groundwater in the vicinity of the SDD varies from 20 to 45 feet below ground surface. Private drinking water wells in the general area of the site typically draw water from approximately 35 to 65 feet below ground surface (E&E, 1991). The depth to groundwater may change seasonally due to changes in precipitation and may also change due to the changes in the water level of the river. The Great Miami River aquifer may recharge and discharge in the area of the site, with river water leaving the river to go into the groundwater or groundwater leaving the aquifer to go into the river. There is some artificial recharge of the aquifer with the Great Miami River surface water, but it is upstream of the site and the city of Dayton. The aquifer recharges naturally during heavy precipitation events in the late fall and early spring.

The direction that the groundwater flows is generally influenced by topography, but direction can also be influenced by the recharge and discharge of water to and from the river and the pumping of nearby wells. Natural flow in the vicinity of SDD is likely heavily influenced by major industrial water users in the area. Ohio Department of Natural Resources (ODNR) well logs indicate that there are two production wells pumping 4,000 gallons per minute at Dayton Power and Light facility on Dryden Road directly east of the SDD. The former Frigidaire Division complex in Moraine off Springboro Road, 1.5 – 2 miles south-southeast of SDD, had wells capable of pumping

up to 8,000 gallons per minute. The latter facility is now closed and part of it has been demolished. The rest has been incorporated into the adjacent GM complex. Status of the former on-site production wells is unknown. The direction of the groundwater flow beneath the SDD is poorly understood. Groundwater from beneath the site has been reported to flow to the southeast and to the southwest (Ohio EPA, 1996a). Groundwater is also suspected of discharging to the gravel pit immediately southwest of the site (PRC, 1995).

Most of the precipitation on site is thought to percolate through the soil to the groundwater. However, heavy precipitation may produce surface water run-off, which is expected follow the topography of the site and flow toward the river or gravel pit to the west and southwest. Most of the SDD site is designated by Federal Emergency Management Agency (FEMA) as a "Special Flood Hazard Area". By definition these land areas are at high risk of flooding with mudflow and flood related erosion hazards (FEMA, 2005). Flood waters in the Great Miami River would first have to overflow the levee before reaching the SDD. Only 24 % of the water used in the Great Miami River watershed is withdrawn from surface waters (MCD, 2005). This surface water is primarily used as cooling water by power plants and is not used as a drinking water resource. Although there is a potential for contaminants to be transported off-site during flooding or heavy precipitation, surface water is not used as a primary source of drinking water in the area. However, people may come into contact with the contaminants suspended in the water or deposited in the sediment while wading, swimming, or fishing, in the Great Miami River adjacent to the site.

Previous Site Investigations

1985 Preliminary Assessment

The Ohio EPA conducted a Preliminary Assessment (PA) of the South Dayton Dump and Landfill in 1985. It concluded that there was documented disposal of hazardous chemicals at the site which posed a threat to contamination of the underlying sand and gravel aquifer. It was also determined that the contaminated groundwater could potentially flow west to the Great Miami River. The Ohio EPA recommended the installation of monitoring wells and further investigation of the site (Ohio EPA, 1985).

1991 Screening Site Inspection

In 1991, USEPA's Field Investigation Team (FIT) conducted a Screening Site Inspection (SSI) which consisted of conducting interviews and taking soil samples. Analytical results of the soil samples indicated the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals at concentrations significantly above background concentrations (E&E, 1991).

Contaminant concentrations were significantly above background concentrations including; 1,2-dichloroethene (DCE) (200 parts per billion (ppb)), mercury (0.31 parts per million (ppm)), cadmium (14 ppm), copper (2,220 ppm), nickel (402 ppm), lead (3,300 ppm), several PAHs (6,400 ppb chrysene and 5,700 ppb benzo(a)pyrene), and PCBs (up to 4,200 ppb) (E&E, 1991). FIT did not take any groundwater, surface water, or air samples. The SSI concluded that there was a potential exposure to contaminants by

direct contact of contaminated soils on site and through migration of contaminants off-site in the surface water and in groundwater (E&E, 1991).

1994 Focused Site Inspection Prioritization

In 1994, PRC Environmental Management, Inc. (PRC) was contracted by the USEPA to prepare a Focused Site Inspection Prioritization (FSIP) of the SDD utilizing the Hazard Ranking System (HRS). The FSIP report evaluated whether, or to what extent, the site poses a threat to human health or the environment. PRC concluded that the site did not require an immediate removal action but they did recommend that an Expanded Site Inspection (ESI) be conducted and it should include the installation and sampling of groundwater wells and the sampling of surface water (PRC, 1995).

1996 Site Team Evaluation Prioritization

In 1996, the Ohio EPA, in a cooperative agreement with the USEPA, conducted a two-phase Site Team Evaluation Prioritization (STEP) investigation. Phase I consisted of drilling exploratory soil borings, collecting groundwater samples at the soil boring locations for VOC screening, and the installation of three monitoring wells. For Phase I, Ohio EPA retained PSARA Technologies, Inc. PSARA reported that the soil borings along the western border of the site, SD-003 through SD-007, encountered an "unidentifiable black sludge-like material" approximately 8 to 12 feet thick. No samples of the black sludge material were collected for analyses. This sludge layer overlies sand and gravel deposits that extend beneath the entire site. Monitoring wells, MW-101A, MW-102, and MW-103, are located in the southwest corner of the site (see Figure 3). It was determined from these monitoring wells that the groundwater flow direction was to the southeast away from the river (PSARA, 1996).

During Phase II of the STEP investigation, soil samples, sediment samples, and groundwater samples were collected by Ohio EPA. The samples were compared to background samples and results with levels three times the concentration of the background were considered contaminated. Results indicate that soils at SDD were contaminated with the VOCs methylene chloride (16 ppb) and trichloroethylene (11 ppb); semi-volatile organic compounds (SVOCs) including PAHs (up to 2,000 ppb) and butylbenzylphthalate (18,000 ppb); the pesticides Lindane (1.8 ppb), DDD (4.4 ppb), DDT (8.8 ppb) and endrine ketone (7.5 ppb); the PCBs Aroclor-1254 (830 ppb) and Aroclor-1260 (1,200 ppb); and metals including copper (191,000 ppm), lead (12,100 ppm), arsenic (141 ppm), and cyanide (3.7 ppm) (Table 1). The sediment sample results indicated that there were concentrations of contaminants that are three times higher than background for some pesticides, aroclor-1254 (a PCB), and mercury (Table 2). One sediment sample from the gravel pit had PCBs at 660 ppb and the pesticides endrin at 34 ppb, endrin aldehyde at 7.9 ppb, and endosulfan sulfate at 3.7 ppb. One sediment sample from the river adjacent to the center of the site had pesticides methoxychlor up to 65 ppb and endrin (up to 4.8 ppb) and mercury (up to 0.65 ppm). Results of the sampling documented that groundwater was contaminated with VOCs, phenol, and heptachlor (a pesticide) from the SDD site and was migrating off-site (OHIO EPA, 1996a).

Monitoring well MW-101, located on the access road in the southwestern portion of the site, had detections of 1,2-dichloroethene (total) of 150 ppb, 1,1-dichloroethane at 13 ppb and acetone at 30 ppb (Table 3). This well also had high levels of phenol (130 ppb) and

potassium up to 114,000 ppb. Another monitoring well, MW-102, located on the floodplain immediately southwest of the site had detections of chloroethane at 22 ppb and toluene at 15 ppb (OHIO EPA, 1996a).

Landowner's Investigations 1998-2004

The landowners have conducted several investigations of the groundwater and surface water at the landfill between 1998 and 2004. In 1998 and 1999, the landowners installed ten additional monitoring wells, MW-201 through MW-212 (monitoring wells MW-205 and MW-211 do not exist) (Figure 3). The 2002/2004 groundwater sampling results indicated the presence of vinyl chloride at concentrations up to 180 ppb (MW-101A) (Maximum Contaminant Level [MCL] 2 ppb); TCE at concentrations of up to 250 ppb (MW-210) (MCL 5 ppb); 1,1-dichloroethane at concentrations of up to 39 ppb; 1,2-dichloroethene (total) at concentrations of up to 480 ppb; 1,1,1-trichloroethane at concentrations of up to 5.2 ppb; and chlorobenzene at concentrations of up to 29 ppb (Table 4). The MCLs are drinking water standards established by USEPA for public water systems to protect public health by limiting levels of contaminants in drinking water. Measurements of groundwater elevations indicated that the direction of groundwater flow is to the southeast towards a number of major industrial groundwater users in Moraine.

Valley Asphalt Plant – Limited Drum Removal Action (2000)

In 2000, buried drums were discovered while installing a new sewer line at the Valley Asphalt Plant, on the north end of SDD (Figure 5). Based on this discovery and the subsequent investigation, it was determined that the SDD landfill operations had extended north to include at least the southern half of the of the Valley Asphalt Plant site. A sample of the drums determined that they were required to be disposed of as hazardous waste due to the enclosed waste exceeding the Toxicity Characteristic Leaching Procedure (TCLP) test for cadmium and lead. The drums were also found to contain the following chemicals; Aroclor-1254 (a PCB) at 75 ppm, benzene at 7,000 ppb, chlorobenzene at 1,700 ppb, ethylbenzene at 84,000 ppb, toluene at 530,000 ppb, TCE at 64,000 ppb, vinyl chloride at 840 ppb, and xylenes at 340,000 ppb (USEPA, 2006). Approximately 2,217 tons of contaminated soil was removed for disposal. Only the drums and the soil in the 600-square foot excavation were removed for disposal. Additional drums were observed in the side-walls of the excavation but were left in place (Conversation with Ohio EPA, Emergency Response personnel, SWDO 2005).

DISCUSSION

Potential Exposure Pathways

For the public *to be exposed* to elevated levels of contaminants in and around the SDD site they must first come into physical contact with the contaminated groundwater, surface water, soils, sediment, or air. To come into contact with the contaminated media there must be a *completed exposure pathway*. A completed exposure pathway consists of *five main parts*, which must be present for a chemical exposure to occur. These include:

- 1) A source of the toxic chemicals of concern;
- 2) A method of Environmental Transport, which allows the chemical contaminant to move from its source (soil, air, groundwater, surface water, sediment);
- 3) A Point of Exposure where the residents come into direct physical contact with the chemical (on-site, off-site);
- 4) A Route of Exposure, which is how the residents come into physical contact with the chemical (drinking, eating, touching); and,
- 5) A Population at Risk which are the people who could possibly come into physical contact with site-related chemicals.

Exposure pathways can also be characterized as to when the exposure occurred or might occur in the *Past, Present, or Future*.

Physical contact with a chemical contaminant, in and by itself, does not necessarily result in adverse health effects. A chemical's ability to affect a resident's health is also controlled by a number of factors, including:

- How much of the chemical a person is exposed to (the *Dose*);
- How long a person is exposed to the chemical (duration of exposure);
- How often a person is exposed to the chemical (frequency); and,
- Toxicity of chemicals the person is exposed to.

Other factors affecting a chemical's likelihood of causing adverse health effects upon contact include the resident's:

- Personal habits
- Diet
- Age and sex
- Current health status
- Past exposures to the contaminants (occupational, hobbies, etc.).

Exposure Pathways

Site-related chlorinated compounds of concern associated with the groundwater plume under the SDD site include TCE, 1,2-DCE, 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), chloroethane (CA), chlorobenzene and vinyl chloride (VC). These compounds are all VOCs and are typically found as liquids in groundwater but will rapidly vaporize to a gas upon exposure to the air. These chemicals are of concern for their potential to migrate off-site, vaporize and move as a gas into the basements of nearby homes (Figure 5) and businesses. This process is called vapor intrusion.

These volatile chemicals tend to be mobile in soils. They are partially soluble in water and are heavier than water (except vinyl chloride). Significant rainfall events can flush these chemicals deeper into the soils, and into the groundwater. When introduced into the groundwater, they tend to sink to the bottom of the aquifer. With increasing distance from the original contamination area and decreasing oxygen levels as they travel deeper into the groundwater, they undergo biodegradation. With the help of anaerobic bacteria, TCE will break down to 1,1-DCE and 1,2-DCE. DCE will then break down into CA and

VC. 1,1,1-TCA will break down into 1,1-DCE and 1,1-DCA which will further degrade to CA and VC (Vogel and McCarty, 1985). These chemicals tend to leave the groundwater and form vapors in the air spaces between soil particles. These vapors move to areas of lower air pressure, typically towards the ground surface and may be intercepted by buildings. Buildings with heating and air conditioning systems often have lower air pressure inside due to the heating and cooling systems. Vapors may migrate into the buildings and people in the buildings may breathe the contaminants.

The PCBs found in the on-site soils and in river sediments will typically adsorb to soil and sediment particles. PCBs may become mobile when soil or sediment particles are transported, such as in dust or in rain-water run off. If soil particles are transported to the surface water they can accumulate in the sediment and enter the aquatic food chain. PCBs are typically persistent in the environment, but can break down when exposed to sunlight. PCBs bioaccumulate in aquatic organisms with significant increases in concentration the higher up in the food chain.

Mercury, PCBs, and pesticides were found in the sediment samples taken in the Great Miami River adjacent to the SDD and at the gravel pit to the south of SDD. Mercury was found at 0.65 ppm, aroclor-1254 at 660 ppb, endrin up to 34 ppb, endrin aldehyde up to 7.9 ppb, methoxychlor up to 65 ppb, and endosulfan sulfate up to 3.7 ppb (OHIO EPA, 1996a).

Sample results indicated high levels of PAHs, pesticides, phthalates, PCBs, and metals are in on-site surface soils (See Table 1) (OHIO EPA, 1996a).

Past Exposures

No well data are available to determine whether the public has been exposed to contaminated drinking water prior to the detection of the groundwater contamination in the monitoring wells. There were public and private wells down-gradient of the site that were a source of people's drinking water in the past. However there are no data that indicate that contaminants from the SDD site were detected in these wells. There was a public well that was closed due to contamination down-gradient of SDD, but the contamination was attributed to a site much closer to the contaminated well than the SDD.

Rain water run off and groundwater from the SDD may have discharged into the river and transported contaminants to the surface water and sediment. The surface water in this area is not a source of drinking water, although the river is used as a recreational or fishing resource. Although fish tissue data indicated excess levels of PCBs and mercury in some fish in the Great Miami River, the source of these contaminants has not been attributed to SDD.

It is unknown if workers at the SDD or nearby facilities or people living nearby were exposed to contaminants in the air in the past through inhalation of contaminants. The extent of past exposure to contaminants through contact with contaminated soil or breathing in contaminated dust from the soil for onsite workers at SDD, workers at the Valley Asphalt Plant, excavation workers at the trench for the sewer at the asphalt plant, or trespassers, is also unknown.

Recreation

Between the SDD and the Greater Miami River there is 350 foot wide strip of land owned by the Miami Conservancy District (MCD, 2005). Within the strip of land next to the SDD, the MCD built a bike trail named the Great Miami River Recreational Trail and a levee. In 1967, MCD gave the responsibility for maintenance and patrolling the Great Miami River Recreational Trail to the Montgomery County Parks District. The bikeway adjacent to SDD is heavily used and is part of a network of trails more than 200 miles long connecting the City of Dayton to trails in surrounding counties (MCD, 2007).

Fishing

There are a number of sports fish found in the Great Miami River adjacent to the SDD. This section of the river is known as excellent smallmouth bass sports fishery, but also has catfish, rock bass, bluegill, carp, and suckers. In 1997, a statewide fish consumption advisory for mercury was issued for Ohio. The advisory stated that women of child-bearing age and children 15 years old and younger should eat no more than one meal per week of fish from any Ohio body of water and no more than the number of meals of fish that are specified in the more restrictive fish consumption advisories for specific waterways. The specific advisories for the Great Miami River adjacent to the SDD are for the following (OHIO EPA, 2007);

- do not eat any species of suckers due to PCB's,
- eat no more than one meal per two months of Common Carp due to PCBs,
- eat no more than one meal per month of Saugeye due to PCBs, and
- eat no more than one meal per month of white bass due to mercury.

Current Exposures

The most likely routes of exposure to contaminants from the SDD site are through coming into direct contact with contaminated soil, through inhalation by breathing indoor air that has been impacted by volatilization of site-related groundwater contaminants, or through ingestion by drinking contaminated groundwater from drinking water wells.

Direct Contact with On-Site Soils Pathway

Contamination was discovered in the shallow on-site soils (less than 6 inches depth). During the SSI in 1991, the following contaminants were detected in on-site soils at levels above the background sample concentrations; lead up to 3,300 ppm (400 ppm is EPA's screening level for lead in residential soil), copper up to 2,200 ppm and total PAHs up to 6,400 ppb. The following results came from soil sampling for the STEP report in 1996; total PAHs up to 11,150 ppb, phthalates up to 21,600 ppb, PCBs up to 2,030 ppb, and numerous metals significantly exceeding background concentrations (See Table 1). The ATSDR has established "Environmental Media Evaluation Guides" (EMEGs) for PCBs and copper which are concentrations at which human may be exposed during a specified period of time (chronic, intermediate, or acute) without experiencing adverse health effects. The soil EMEGs for PCBs are 10 ppm for chronic and 20 ppm for intermediate exposures (chronic is more than one year and intermediate is more than two

weeks and less than one year). The intermediate soil EMEG for copper is 7,000 ppm for adults. All the sample results are below the ATSDR intermediate and chronic EMEG values for (ATSDR, 2006); however, the lead concentration is above the EPA's screening level for residential soils. ATSDR has not established soil EMEGs for PAHs and phthalates. It is unknown if people are being exposed to contaminants in the on-site soils. It is unknown if there are trespassers or workers from nearby businesses that come into contact with the contaminated soils on site or breathe in dust generated from these soils. There are numerous nearby light industries and an asphalt plant that occupies part of the landfill. Workers from some of these industries reportedly use part of the site for storage of materials. Also, it is also unknown if the surface water runoff is transporting contaminated soils to the bikeway or other off-site locations where people may come into contact with them. There are no data indicating that nearby workers or people using the bikeway are exposed to contaminants in the soil from the SDD.

Off-Site Aquatic Food-Chain Pathway

PCBs and mercury have been discovered at elevated levels in the sediments and in the fish tissues of fish in the Great Miami River adjacent to the site. There are very few residents in the immediate vicinity of the site; therefore, it is unlikely that residents and visitors are being exposed to contaminated sediments on a regular basis. Ohio has a fish consumption advisory in place to protect citizens. There is a statewide advisory for mercury and the Great Miami River has advisories for both mercury and PCBs in fish. It is unknown if people are consuming more fish than the recommended rate of the advisory or if there are subsistence fishermen. There are no data that directly connect the contaminants in the fish or sediment in the Great Miami River to the contamination found at the SDD site.

Drinking-Water Pathway

There are no data indicating that the chemicals that have been detected in on-site soils and in the groundwater at the property boundary are being transported to drinking water supplies used by the area residents. Although the drinking water is from the same sand and gravel aquifer that has been found to be contaminated at the boundary of the site, the closest public or private water wells are located about 3 to 4 miles from the site. It is unlikely that the levels of contaminants in the groundwater from this site would have any impact on these wells. The Montgomery County Miami Shores wellfield is about three miles south-southwest of the site. It is on standby, but if put into use, it could supply water for up to 150,000 people.

The contaminants vinyl chloride, trichloroethylene, and 1,2-dichloroethylene were detected in the groundwater at monitoring wells along the south boundary of the SDD property (wells MW-101A and MW-210) (Figure 3). Detections of vinyl chloride range from 4 ppb to 180 ppb (MW-101A). Trichloroethylene was found in concentrations ranging from 30 to 250 ppb in well MW-210, from 8 ppb to 22 ppb in well MW-201, and from 11 ppb to 41 ppb in well MW-202. Detections of 1,2-dichloroethene ranged from 41 ppb to 480 ppb in well MW-101A (Hoffman, 2005). At the time these samples were collected, the direction of groundwater flow was to the southeast.

Vapor Intrusion Pathway

Volatile organic compounds can escape the groundwater and migrate through the air spaces in the soil to the indoor air in nearby residential basements (Figure 5) and commercial or industrial work locations. The inhalation of the vapor phase of these site-related contaminants is another potential exposure route. Conditions found at this site that are favorable for contaminant migration via vapor intrusion pathway include: the shallow depth to groundwater (12 to 18 feet below ground surface), the type of soil (sand and gravel), which allows for easy transport of contaminants through the soil air spaces, and the close proximity of homes with basements and work locations. The potential for offsite vapor intrusion at this site has not been investigated. No indoor air or soil gas data has been collected to determine whether vapor intrusion is occurring or that there is an inhalation exposure for residences with basements within a quarter mile south of the site or for workers at locations on the northern and eastern portions of the site (Figure 5).

CHILD HEALTH CONSIDERATIONS

ATSDR and HAS recognize the unique vulnerabilities of children exposed to environmental contamination and hazards. As part of this health assessment, HAS considered the greater sensitivity of the children who live in the area of the SDD site when drawing conclusions and making recommendations regarding health effects from exposure to chemicals related to the SDD site.

CONCLUSIONS

The SDD site posed an **"Indeterminate Public Health Hazard"** for exposure of area residents and workers to contaminants in the past. 1) There are no data that indicate that the workers or visitors to the site were coming into contact with contaminants in the surface soils or sediments. 2) Elevated levels of PCBs and mercury have been found in the soils and sediments on-site and in the tissues of fish from the Great Miami River, but the contamination in the fish has not been directly linked to the SDD. 3) There are no soil gas data or indoor air data to determine if nearby residents and workers were inhaling vapor phase contaminants. 4) There are no data to indicate whether nearby drinking water wells were contaminated.

The SDD site *currently* poses an **"Indeterminate Public Health Hazard"** for the exposure of nearby residents and workers to contaminants through drinking contaminated groundwater. TCE, DCE, and VC are being transported off-site in the groundwater, however, the extent of contamination off-site has not been fully characterized. Nearby residents are currently connected to the city of Dayton public water supply whose wellfields are not impacted by the contaminants from the SDD site. Currently there is no evidence of a drinking water threat. The Valley Asphalt facility is using an on-site well to supply water to a kitchen and a bathroom for offices on site. No data has been collected to indicate whether workers are being exposed to contaminants from the drinking water. The Delphi Automotive plant, Oakwood City, the City of West Carrollton, and Montgomery County all have drinking water wells within 4 miles of the site. There are no drinking water data that indicate that these wells are being impacted by the groundwater contamination from the SDD site.

The SDD site *currently* poses an **“Indeterminate Public Health Hazard”** for the exposure of nearby residents and workers to contaminants through inhalation of contaminants in vapors in their homes and work locations, and through contact with contaminated surface soils or sediments. There are no soil gas data or indoor air data to determine if vapor intrusion of contaminants is occurring at nearby residential or commercial properties.

The SDD site *currently* poses an **“Indeterminate Public Health Hazard”** for the exposure of nearby residents and workers to contaminants through contact with contaminated surface soils or sediments. Workers, residents, trespassers, and visitors who enter the site may come into contact with contaminants in the surface soils or sediments. Elevated levels of mercury, cadmium, copper, nickel, lead, methylene chloride, TCE, tetrachloroethylene (PCE), DCE, phthalates, pesticides, PAHs, and PCBs, have been detected in on-site surface soils. However, there are no data that indicate the workers, residents, trespassers, or visitors to the site are being exposed to site-related contaminants at levels that would cause adverse health effects.

The SDD site *currently* poses an **“Indeterminate Public Health Hazard”** for the exposure of area residents to contaminants through consumption of fish adjacent to the site in the Great Miami River. Although, elevated levels of PCBs and mercury have been found in the soils and sediments on-site and in fish caught in the Great Miami River adjacent to the site, these contaminants have not been conclusively linked to the SDD site.

The SDD site poses an **“Indeterminate Public Health Hazard”** in the *future* for exposure of nearby residents and workers to contaminants through drinking contaminated groundwater, through inhalation from vapor intrusion into their homes and work locations, and through contact with contaminated surface soils or sediments. TCE, DCE, and VC are being transported off-site in the groundwater, however, the extent of contamination off-site has not been fully characterized. The Valley Asphalt facility is using an on-site well to supply water to a kitchen and a bathroom for on site offices. Within four miles of the site there are mostly production wells for industrial process water, such as the Delphi Automotive plant and a few city wellfield for drinking water, such as the Oakwood City, the City of West Carrollton, and Montgomery County. If the groundwater contamination migrates to these wells, the potential future exposure would be from using these wells as a source of drinking water. Also, soil gas may migrate from the contaminated groundwater to the indoor air environment of nearby residences or work locations. Workers, residents, trespassers, and visitors who enter the site, may come into contact with contaminants in the surface soils or sediments.

The SDD site poses an **“Indeterminate Public Health Hazard”** in the *future* for the exposure of area residents to contaminants through consumption of fish from the Great Miami River adjacent to the SDD site. People may eat fish caught in the Great Miami River and be exposed to elevated levels of PCBs and mercury in fish tissues that originated from the SDD site soils and sediments.

RECOMMENDATIONS

Environmental sampling as part of a Remedial Investigation / Feasibility Study (RI/FS) should be completed at the site to better characterize the extent of contamination including:

1. More fully determine the nature and extent of groundwater contamination. The nature and extent of groundwater contamination needs to be investigated not only to ensure that people are not drinking contaminated water, but also to determine if there is a potential threat to local residents and workers from contaminants via the vapor intrusion pathway.
2. If groundwater contamination is a potential threat via the vapor intrusion pathway, the site investigation would also need to determine if nearby residents and workers are being exposed or will potentially be exposed in the future to contaminants from the SDD.
3. The direction and rate of groundwater flow - Need to determine the direction and rate of groundwater flow to ensure that drinking water wells are not at risk of contamination. The pumping of nearby industrial production wells and groundwater recharge and discharge to and from the Great Miami River may be affecting the direction and rate of groundwater flow as well as the migration of contaminants from the site.
4. Soil contamination - The site should be secured so that workers do not come into contact with contaminated soils. If portions of the former SDD are currently being utilized by nearby facilities, such as the Valley Asphalt Plant, measures need to be taken to ensure that workers will not be exposed to contaminants.
5. Determine if the contamination from the SDD site is impacting sediment and fish in the Great Miami River and posing a health threat to people eating the fish.

PUBLIC HEALTH ACTION PLAN

Actions at this site are currently being pursued under the USEPA Superfund Alternative Sites (SAS) program. A Remedial Investigation / Feasibility Study is currently being conducted by the potentially responsible parties under the supervision of the U.S. EPA. Due to the incomplete information characterizing the nature and extent of contamination on-site and lack data characterizing the extent of contamination of the offsite groundwater plume, no public health education activities or public meetings are planned at this time. HAS will review any additional environmental data collected.

PREPARED BY

Peter J. Ferron— Environmental Specialist
Robert C. Frey Ph. D. — Principal Investigator

REFERENCES

ECOLOGY AND ENVIRONMENT, INC (E & E). 1991. Screening Site Inspection Report for South Dayton Dump, Moraine, Ohio. September 23, 1991. Prepared for the U.S. Environmental Protection Agency.

Federal Emergency Management Agency, (FEMA). 2005. Digital Q3 Flood Data scanned from Flood Insurance Rate Map, from 2000 data set as presented on USEPA's EnviroMapper web-site.

HOFFMAN. 2005. South Dayton Landfill/Recent Results, from Timothy D Hoffman, Coolidge Wall Womsley & Lombard LPA to Matt Justice, Ohio EPA. 12 January 2005.

MIAMI CONSERVANCY DISTRICT (MCD). 2007. Web page for the Great Miami River Watershed.

OHIO DEPARTMENT OF HEALTH (ODH). 2005. Conversation. Between Peter Ferron, ODH HAS and Mark Case, Montgomery County Health Department. May 13, 2005.

OHIO DEPARTMENT OF NATURAL RESOURCES (ODNR). 2005. Well Logs for South Dayton Landfill (1999), Moraine Recycling Company (1972), Valley Asphalt Corporation (1956 & 1969), and Dayton Power & Light (1954, 1955, 1956, 1967, 1990, 1995, 2001).

OHIO ENVIRONMENTAL PROTECTION AGENCY (OHIO EPA). 1985. Preliminary Assessment Narrative for the South Dayton Dump & Landfill. May 6, 1985. Prepared for the U.S. Environmental Protection Agency.

OHIO EPA. 1996a. Site Team Evaluation Prioritization Report, South Dayton Dump and Landfill, Phase II. December 24, 1996. Prepared for the U.S. Environmental Protection Agency.

OHIO EPA. 1996b. Site Team Evaluation Prioritization (STEP) Report, South Dayton Dump and Landfill, Phase I. February 26, 1996. Prepared for the U.S. Environmental Protection Agency.

OHIO EPA, 2007. Ohio Sports Fish Consumption Advisory. Web Page. Last updated 10 April 2007.

PRC ENVIRONMENTAL MANAGEMENT, INC (PRC). 1995. Focused Site Inspection Prioritization Site Inspection Report, South Dayton Dump. February 10, 1995. Prepared for the U.S. Environmental Protection Agency.

PSARA TECHNOLOGIES, INC (PSARA). 1996. Installation of Groundwater Monitoring Wells at the South Dayton Dump, Moraine, Ohio. June 1996. Prepared for the Ohio Environmental Protection Agency.

U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA). 2004. Hazard Ranking System (HRS) Documentation Record. August 2004. Prepared by Tetra Tech EM Inc. Chicago, Illinois.

USEPA. 2006. South Dayton Dump and Landfill, Administrative Settlement Agreement and Order of Consent for Remedial Investigation/Feasibility Study. August, 2006.

VOGEL, T. M. AND P. I. MCCARTY, 1985. Biotransformation of Tetrachloroethylene to Trichloroethylene, Dichloroethene, Vinyl Chloride, and Carbon Dioxide Under Methanogenic Conditions. Applied and Environmental Microbiology. v. 6, p.1101-1107.

TABLES AND FIGURES

Table 1. Surface Soil Contaminant Concentrations (0 to 6 inches depth) - STEP Investigation 1996, Ohio EPA				
	Up to	Background	Comparison Values	Source^a
VOLATILE ORGANIC COMPOUNDS (VOCs) - parts per billion (ppb)				
Methylene chloride	16	ND	90,000	CREG B2
Trichloroethylene	11	ND	400,000	Pica Acute EMEG
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) - parts per billion (ppb)				
Phenanthrene	1,700	63		
Fluoranthene	2,000	110	30,000,000	Adult RMEG
Pyrene	1,900	130	20,000,000	Adult RMEG
Benzo(a)anthracene	1,100	58		B2
Chrysene	1,200	83		B2
Benzo(b)fluoranthene	1,300	ND		B2
Benzo(k)fluoranthene	950	ND		B2
Benzo(a)pyrene	1,000	62	100	CREG B2
Indeno(1,2,3-cd) pyrene	910	48		B2
Dibenzo(a,h)anthracene	450	ND		B2
PESTICIDES - parts per billion (ppb)				
Gamma-BHC (Lindane)	1.8	ND		
Endosulfan II	5.4	1.4	1,000,000	Adult EMEG
4,4-DDD	4.4	0.65	3,000	CREG B2
4,4-DDT	8.8	1.6	2,000	CREG B2
Endrin ketone	7.5	ND		
POLYCHLORINATED BIPHENYLS (PCBS)- parts per billion (ppb)				
Aroclor-1254	830	ND	10,000	Chronic EMEG
Aroclor-1260	1,200	ND		
PHTHALATES - parts per billion (ppb)				
Butylbenzylphthalate	18,000	ND	100,000,000	Adult RMEG
Bis(2-ethylhexyl)phthalate	2,100	230		
METALS - parts per million (ppm)				
Antimony	278	ND	300	Adult RMEG
Arsenic	141	6.0	0.5	CREG A
Barium	13,000	112	400,000	Adult RMEG
Beryllium	5.8	0.62	1,000	Adult EMEG B1
Cadmium	16.3	0.57	100	Adult EMEG B1
Chromium	62.0	17.3		
Copper	191,000	22.5	7,000	Adult EMEG
Lead	12,100	31.5	400^b	B2
Nickel	139	12.9	10,000	Adult RMEG
Selenium	8.8	ND	4,000	Adult EMEG
Silver	7.6	0.45	4,000	Adult RMEG
Vanadium	92.6	17.4	2,000	Adult Inter. EMEG
Zinc	11,500	76.9	200,000	Adult EMEG
Cyanide	3.7	0.30	10,000	Adult RMEG

ND – Analyte was analyzed for but not detected

^aATSDR Soil Comparison Values Feb. 20, 2007 -

^bResidential Soil Lead Action Level-Removal Actions established by U.S. EPA and HAS

Table 2. Sediment Contaminant Concentrations - STEP Investigation 1996, Ohio EPA					
	Gravel Pit	River Sediment	Background	Comparison Values	Source^a
PESTICIDES - parts per billion (ppb)					
Endrin	34	4.8	ND	200,000	Adult EMEG
Endosulfan sulfate	3.7	ND	ND	1,000,000	Adult EMEG
Methoxychlor	18	65	ND	4,000,000	Adult Inter. EMEG
Endrin aldehyde	7.9	ND	ND		
POLYCHLORINATED BIPHENYLS (PCBs)- parts per billion (ppb)					
Aroclor-1254	660	ND	ND	10,000	Adult EMEG
METALS - parts per million (ppm)					
Mercury	ND	0.65	0.13		

ND – Analyte was analyzed for but not detected

^aATSDR Soil Comparison Values Feb. 20, 2007

Table 3. Groundwater Contaminant Concentrations - STEP Investigation 1996, Ohio EPA				
	Up to	Background	Comparison Values^a	U. S. EPA^b
VOLATILE ORGANIC COMPOUNDS (VOCs)- parts per billion (ppb)				
Chloroethane	22	ND		
Acetone	30	ND	30,000 Adult RMEG	
1,1-dichloroethane	13	ND		
1,2-dichloroethane (total)	150	ND	0.4 CREG B2	5 MCL
Toluene	15	ND	700 Int. EMEG	1,000 MCL
SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)- parts per billion (ppb)				
Phenol	130	ND	10,000 RMEG	
PESTICIDES - parts per billion (ppb)				
Heptachlor	0.51	ND	0.008 CREG B2	0.4 MCL
METALS- parts per billion (ppb)				
Potassium	114,000	9,570		

ND – Analyte was analyzed for but not detected

^aATSDR drinking water comparison values, Feb. 20, 2007

^bU.S.EPA Maximum Contaminant Levels

Table 4. Groundwater Sample Results 1996 through 2004 Parts per billion (ppb)									
	MCL	MW- 101a	MW- 102	MW- 103	MW- 201	MW- 202	MW- 203	MW- 208	MW-210
Vinyl chloride	2	4-180	ND	ND	ND	ND	ND-2	ND-1	ND
Trichloroethylene	5	ND	ND- 0.7	ND-8	5.9-22	11-41	ND	ND-2	30-260
1,1-Dichloroethane	NL	8.7- 20,000	ND	ND	ND	ND	ND- 13	ND	ND
1,2-Dichloroethene (total)	70	92-480	ND	ND	ND	ND-3	ND- 25	ND-2	ND-45
1,1,1- Trichloroethane	200	ND	ND	ND	ND- 8.9	ND	ND	ND	ND
Chlorobenzene	100	ND	ND	ND	ND	ND	12-29	ND	ND

Monitoring Wells MW-204, MW-206, MW-207, MW-209, & MW-212 – all results were below detection limits.

Bolded results are above the MCLs.

Source - Hoffman, 2005

ND – Analyte was analyzed for but not detected

NL – No Level established

FIGURES

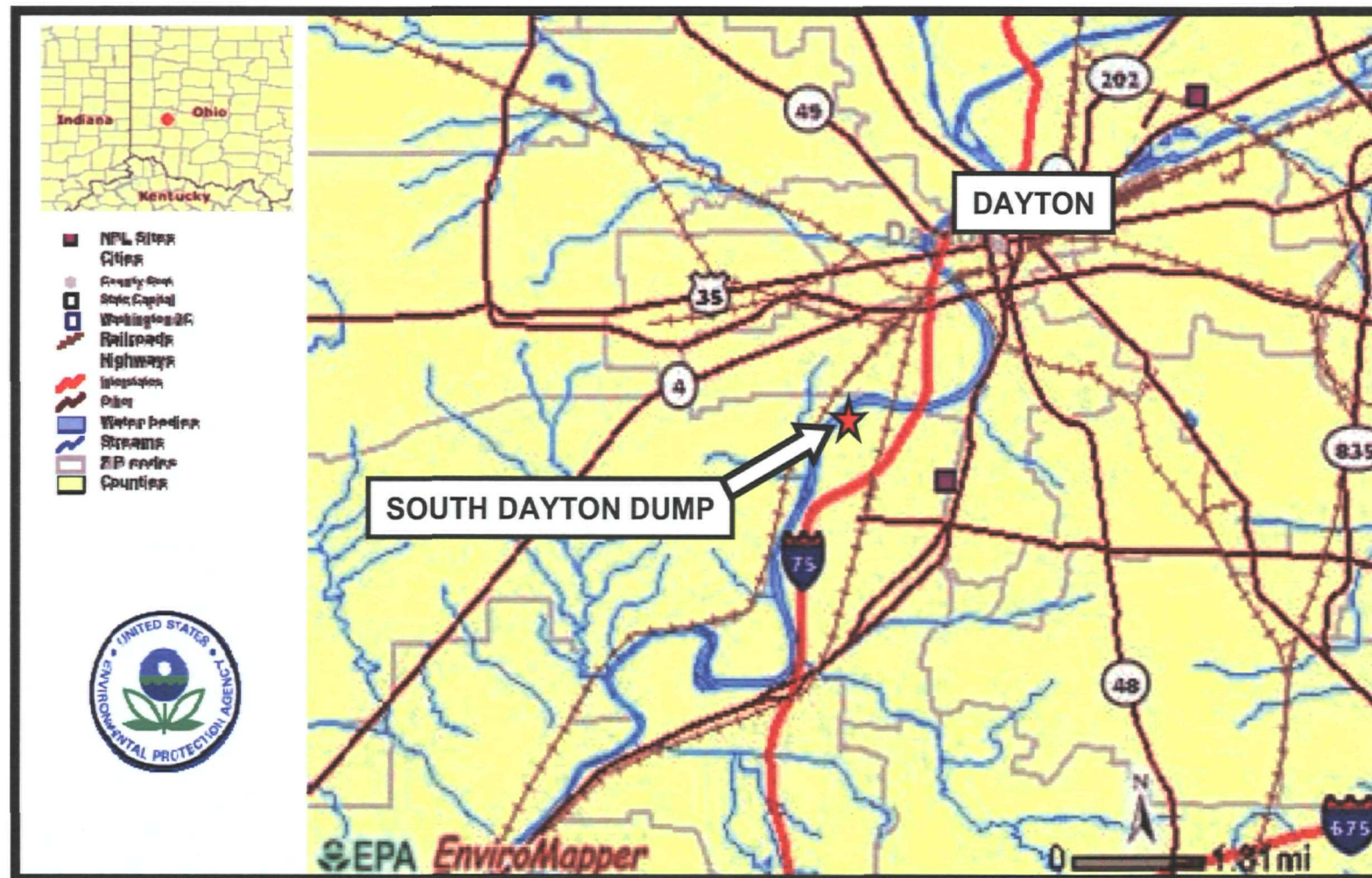


FIGURE 1. SOUTH DAYTON DUMP LOCATION

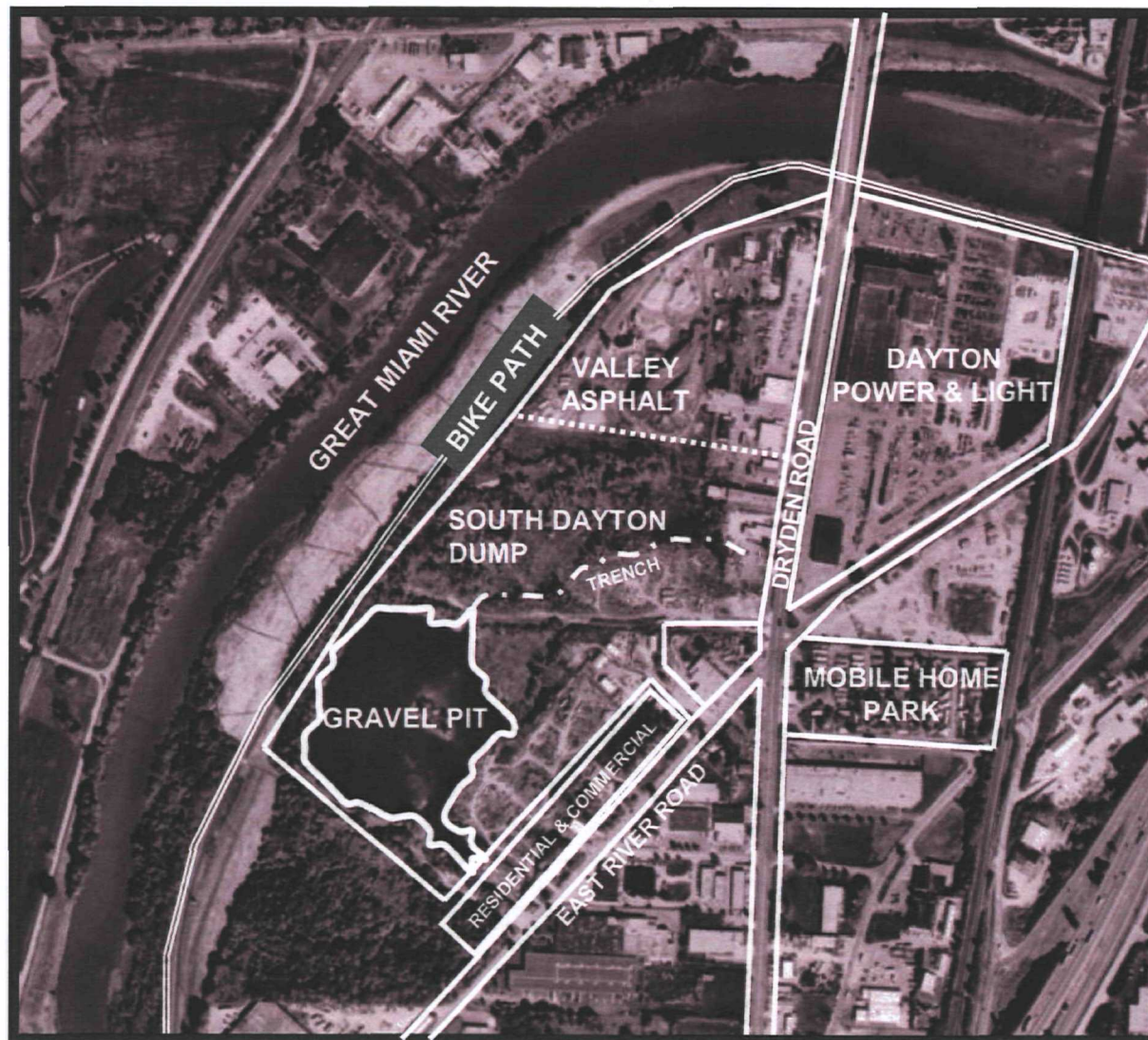


FIGURE 2. South Dayton Dump and Surrounding Area

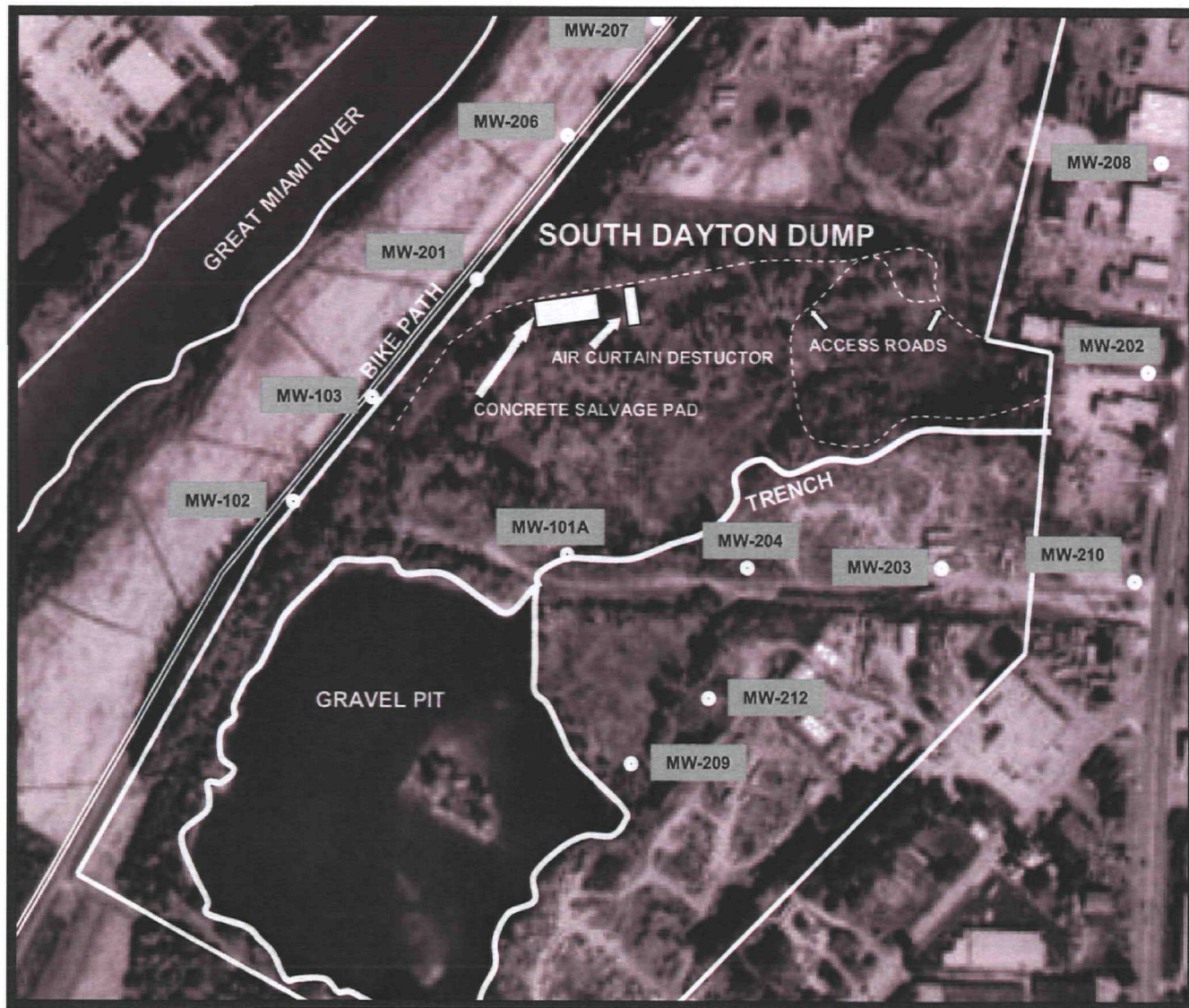


FIGURE 3 SOUTH DAYTON DUMP MONITORING WELL LOCATIONS

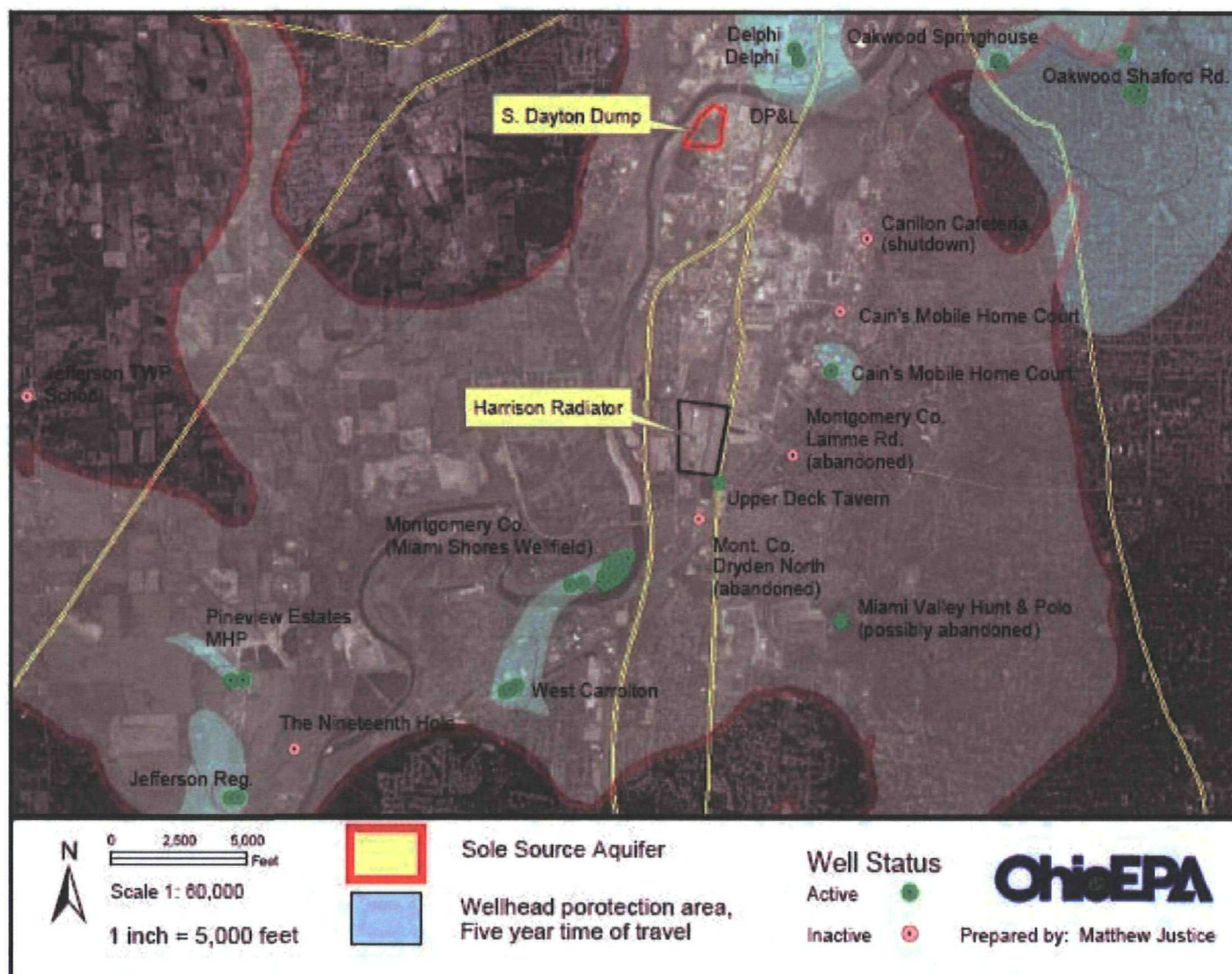


Figure 4. Location of Drinking Water Wells and Sole Source Aquifer System Near the South Dayton Dump



Figure 5. Location of Residential Homes in the Vicinity of South Dayton Dump

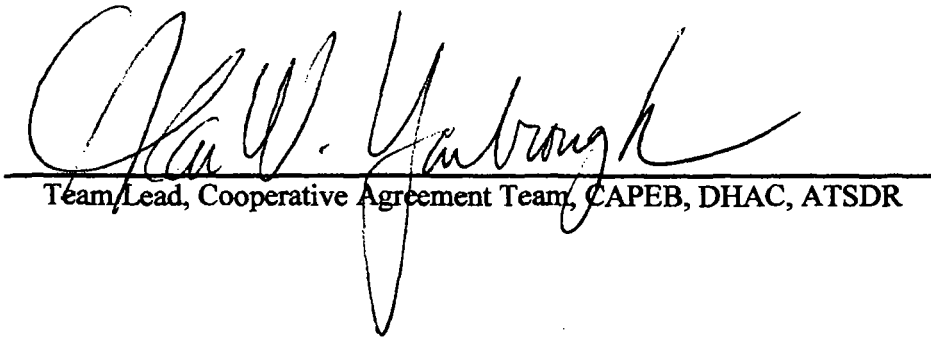
CERTIFICATION

This South Dayton Dump & Landfill Health Assessment was prepared by the Ohio Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun. Editorial review was completed by the Cooperative Agreement Partner.



Technical Project Officer, CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.



Team Lead, Cooperative Agreement Team, CAPEB, DHAC, ATSDR



OHIO DEPARTMENT OF HEALTH

246 North High Street
Columbus, Ohio 43215

614/466-3543
www.odh.ohio.gov

Ted Strickland/Governor

Alvin D. Jackson, M.D./Director of Health

October 12, 2007

Karen Cibulskis
U.S. EPA Region 5
77 West Jackson Boulevard
Mail Code: SR-6J
Chicago, IL 60604-3507

Dear Karen:

Enclosed is a "Brown Cover" draft copy of the Public Health Assessment for South Dayton Dump in Montgomery County, Ohio. This document was produced by the Health Assessment Section of the Ohio Department of Health under cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR).

Please review the document for technical or factual errors or omissions. Pay particular attention to the site history, sampling data, and information regarding conditions at the site. Please comment on the recommendations as these will be used in the development of the Public Health Action Plan for the site however, keep in mind that the data in this document was generated before the start of the Remedial Investigation. Although this "Brown Cover" draft is intended for public comment, comments by regulatory agencies will be incorporated in the final document.

A copy of this document will be available for public access at the Kettering-Moraine Branch of the Montgomery County Library, 3496 Far Hills Avenue, Kettering, OH 45429 and on the ODH HAS web page http://www.odh.ohio.gov/odhPrograms/eh/hlth_as/pha.aspx.

Please forward written comments to me at the address below. Ohio Department of Health would like all comments in our office by **November 17, 2007**. Following the public comment period, the draft document will go through the last revision and the final document will be released in a "Blue Cover" document. If you have any questions give me a call at (614) 995-4157. Thanks you for your time and consideration.

Sincerely,

Peter J. Ferron
Environmental Specialist II

Ohio Department of Health
Bureau of Environmental Health
246 North High Street – 5th Floor

P.O. Box 118
Columbus, Ohio 43216-0118

cc: Robert Frey, PhD, Chief, Health Assessment Section